

Probiophage DF™

Bacteriophages and Probiotics



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This information is provided as a medical and scientific educational resource for the use of physicians and other licensed health-care practitioners ("Practitioners"). This information is intended for Practitioners to use as a basis for determining whether to recommend these products to their patients. All recommendations regarding protocols, dosing, prescribing, and/or usage instructions should be tailored to the individual needs of the patient considering their medical history and concomitant therapies. This information is not intended for use by consumers.

Probiophage DF™ provides a dairy-free proprietary blend of seven probiotic strains and PrePhage™ Bacteriophage Prebiotic Blend to support gut microbiome health, microbial balance, gastrointestinal (GI) function and motility, and the body's response to potentially harmful pathogenic GI microbes.*

This unique formulation provides a dairy-free proprietary probiotic blend in a clinically useful serving of 235 mg (5 billion colony-forming units [CFU]) of *Lactobacillus acidophilus*, *Bifidobacterium bifidum*, *B. longum*, *L. rhamnosus*, *L. casei*, *Streptococcus thermophilus*, and *B. breve*. It also contains 15 mg of PrePhage™ Bacteriophage Prebiotic Blend containing LH01-Myoviridae, LL5-Siphoviridae, T4D-Myoviridae, and LL12-Myoviridae to support the body's response to potentially harmful pathogenic gut microbes.* This formula is designed to help support GI microbial balance, gut motility and function, and immune health.*

Ingredient Highlights

- Synergistic combination of seven strains of *Lactobacillus*, *Bifidobacterium*, and *Streptococcus thermophilus* to promote GI health and gut microbial balance*
- Clinically relevant amount of PrePhage™ Bacteriophage Prebiotic Blend contains LH01-Myoviridae, LL5-Siphoviridae, T4D-Myoviridae, and LL12-Myoviridae to support the body's response to potentially harmful pathogenic gut microbes*
- Probiotic and prebiotic strain identification provided for transparency
- Dairy-free, gluten-free, and soy-free
- Non-GMO

Probiotics and Gut Health

Probiotics have been shown to support a healthy repopulation of intestinal flora after antibiotic use.¹ A Cochrane study analyzed data from more than 6,000 participants in 33 studies regarding the effects of probiotic supplementation on antibiotic-associated diarrhea (AAD) in the pediatric population. The authors reported that supplementing with higher probiotic doses (≥5 billion CFUs per day) was more effective than lower probiotic doses and that the incidence of AAD in high-dose studies was 13% as compared to 23% in the control group.¹ A systematic review and meta-analysis also reported strong evidence to support probiotic administration in the attenuation of the effects of AAD in both pediatric and adult populations.²

The administration of probiotics has been shown to help protect against certain enteropathogens.³ Probiotics may help protect the intestinal barrier, create unfavorable conditions for certain pathogens, and competitively inhibit pathogenic activity.³ Studies indicate that probiotics as adjunctive agents may help support the attenuation of certain pathogens such as *Helicobacter pylori*.⁴

Animal and clinical studies indicate that probiotics may support GI function and a healthy immune response.⁵ One clinical trial showed that *L. rhamnosus* reduced certain inflammatory cytokines and improved the severity of abdominal pain in children with irritable bowel syndrome (IBS).⁵ Another trial involving eight probiotic strains showed an improvement in quality of life and a reduction in symptoms related to IBS in children as compared to a placebo.⁵

A randomized, double-blind, placebo-controlled trial studied the effects of probiotic use for post-surgical patients with colorectal cancer.⁶ The treatment arm was given a 30 billion CFU mixture of six viable strains, including *Lactobacillus acidophilus*, *L. casei*, and *Bifidobacterium longum*, twice daily for 6 months beginning 4 weeks post-surgery. The study findings showed a significant reduction in the level of pro-inflammatory cytokines, tumor necrosis factor-alpha, interleukin (IL)-17A, IL-17C, IL-22, IL-10, and IL-12.⁶ In addition, the study results indicated the use of probiotics postoperatively did not exacerbate diarrhea and did not include safety concerns.⁶

Probiotics and the Allergic Response

Probiotics may also support a healthy allergic response and help promote a healthy type 1 T helper (Th1)/Th2 balance.⁷ They may also inhibit the production of IL-4, IL-5, and immunoglobulin E.⁷ Certain species of *Lactobacillus* have been shown to modulate the presence of Th2 cytokines, IL-4 and IL-5.⁸

A randomized controlled trial involved supplementation with probiotics for 8 weeks in 42 individuals experiencing chronic urticaria.⁷ Study participants were randomized to groups of patients who were given either a placebo plus an antihistamine

Benefits*

- Supports a healthy gut microbial balance
- Promotes healthy gut motility and function
- Supports a normal immune response
- Promotes optimal gastrointestinal health
- Helps support brain health

Supplement Facts

Serving Size 1 capsule	
Amount Per Serving	% Daily Value
Proprietary Probiotic Blend (<i>Lactobacillus acidophilus</i> , <i>Bifidobacterium bifidum</i> , <i>Bifidobacterium longum</i> , <i>Lactobacillus rhamnosus</i> , <i>Lactobacillus casei</i> , <i>Streptococcus thermophilus</i> , <i>Bifidobacterium breve</i>)	295 mg (5 billion CFU) *
PrePhage™ Bacteriophage Prebiotic Blend (LH01-Myoviridae, LL5-Siphoviridae, T4D-Myoviridae, LL12-Myoviridae)	15 mg *

*Daily Value not established.

Other Ingredients: Delayed release capsule (hydroxypropyl methylcellulose [HPMC], pectin, water), medium chain triglycerides.

or a probiotic plus an antihistamine. Patients in the intervention arm received synbiotic capsules twice daily that included *Lactobacillus rhamnosus*, *L. casei*, *L. acidophilus*, *B. longum*, *B. breve*, and *S. thermophilus*.⁷ Study results indicate that the urticaria number was significantly lower in the treatment arm as compared to a placebo. Itching severity was also significantly lower in the group receiving the probiotic intervention.⁷

Probiotics and the Gut-Brain Axis

The gut microbiome may influence cognitive functioning through many different pathways including neural, metabolic, neuroendocrine, and immune.⁹ Metabolites of microbes such as short-chain fatty acids (SCFAs) can play an important role in many aspects of human health and the gut-brain axis.⁹ A study assessed the levels of SCFAs in individuals with depression and in those with an absence of depression. It was found that non-depressed persons had generally higher levels of SCFAs.¹⁰

The vagus nerve is an important communication route in the gut-brain axis.¹¹ The immune system has been shown to have a bidirectional influence on the gut-brain axis; levels of IL-1 and IL-6 may be modulated indirectly by certain microbiota and probiotics.¹¹ In the hypothalamus, IL-1 and IL-6 may then regulate the release of corticotropin-releasing hormone, a regulator of the hypothalamic-pituitary-adrenal axis.¹¹

Probiotic supplementation may support the production of neurotransmitters, a healthy inflammatory response, and healthy brain-derived neurotrophic factor levels.¹² Some clinical studies have indicated that supplementation with multiple probiotic strains may support the decrease of depressive symptoms more than with a single strain.⁹ A double-blind randomized controlled trial explored the potential relationship between high-dose probiotic supplementation and clinical outcomes related to depression. Participants were randomized to either a placebo or a treatment group.¹³ The treatment consisted of daily supplementation for 4 weeks with probiotic strains containing 900 billion CFUs. The probiotic strains included *S. thermophilus* NCIMB 30438, *B. breve* NCIMB 30441, *B. lactis*, and *L. acidophilus* NCIMB 30442. Major study parameters were assessed at baseline, week 4, and 4 weeks after treatment concluded (week 8). Depressive symptoms were assessed using the Hamilton Depression Rating Scale (HAM-D).¹³

Study results indicate that increases in the genus *Lactobacillus* were linked with decreases in depressive symptoms in the treatment group.¹³ In addition, according to measurements in brain activity, supplementation with probiotics was shown to change the activation of the putamen during emotional processing and the volume of gray matter in the calcarine sulcus. Also, HAM-D scores showed continuous improvement at the study terminus and again 4 weeks after treatment concluded.¹³ Overall, probiotic supplementation in the treatment group was associated with improvements in self-reported depressive symptoms based on HAM-D scores as compared to a placebo. Probiotic supplementation was also associated with improvements in biomarkers associated with gut microbiome health, including species richness.¹³

PrePhage™ Bacteriophage Prebiotic Blend

Bacteriophages are non-digestible bacteria-targeting agents that have been shown to help support healthy populations of GI microbiota and have a high selectivity for helping to promote the body's response of targets to pathogenic or pro-inflammatory bacteria in the body.¹⁴ Bacteriophages have a narrow range that is limited to pathogenic microbes that may cause dysbiosis, disease, or disruptions in intestinal homeostasis.¹⁵

A 28-day double-blind, placebo-controlled, crossover study explored the potential efficacy of bacteriophages in 36 adults between the ages of 18 and 65 years. The treatment consisted of a bacteriophage blend containing LH01-Myoviridae, LL5-Siphoviridae, T4D-Myoviridae, and LL12-Myoviridae at 10⁶ phages per dose (15 mg capsules). *Escherichia coli* populations were reduced by approximately 40% after treatment; *E. coli* populations were reduced by 14% in the placebo group.¹⁴ Decreases in IL-4 and taxa related to *Clostridium perfringens* were also reported, alongside increases in butyrate-producing *Eubacterium*.¹⁴

A 4-week, randomized, parallel-arm, double-blind placebo-controlled study compared daily supplementation with probiotics plus bacteriophages with probiotics alone in 66 adults.¹⁵ This study contained three arms: a probiotic alone (1 × 10⁹ CFU *B. lactis*) arm, a probiotic plus prebiotic bacteriophage blend arm, and a placebo arm. The bacteriophage blend contained 15 mg of LH01-Myoviridae, LL5-Siphoviridae, T4D-Myoviridae, and LL12-Myoviridae bacteriophages. Individuals who received the combination treatment experienced improvements in digestive symptoms and colon pain, and had the highest percentage of individuals reporting reduced symptom severity. Although increases in *Lactobacillus* were observed in both treatment groups, a 10-fold increase was observed in the combination group, as compared to a 4-fold increase in the probiotic-alone group. The authors conclude that there may be an additive benefit when combining bacteriophages and a probiotic.¹⁵

Recommended Use: Take 1 capsule per day with a meal or as directed by your health-care practitioner.

Refrigeration is recommended, which will ensure maximum potency and shelf life. Organism potency will decrease slowly; this process may be accelerated through exposure to heat, humidity, or direct sunlight. Organisms are viable at the time of manufacture.

For a list of references cited in this document, please visit:

<https://www.designsforhealth.com/api/library-assets/literature-reference---probiophage-df-tech-sheet-references>

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Healthcare practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage.

***These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**

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